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Treatment-Disrupting Behaviors during Psychotherapy of Patients with Personality Disorders: The Predictive Power of Psychodynamic Personality Diagnosis

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Background. **Behavioral dyscontrol and violations of treatment contracts are serious clinical problems during psychotherapy, especially in treating patients with personality disorders. However, little is known about predictors of these treatment-interfering phenomena.**

Objective. **To identify psychodynamic personality characteristics that can interfere with the psychotherapy process as indicated by treatment-disrupting behaviors.**

Methods. **Sociodemographic characteristics, descriptive psychiatric diagnoses, and psychodynamic characteristics were assessed in 89 inpatients with personality disorders in psychotherapeutic treatment. Psychodynamic characteristics were assessed with the Developmental Profile (DP). DP variables were used to predict impulsive acts, anger outbursts, parasuicidal behaviors, and contract violations. Incremental value was established.**

Results. **In this sample, 4 out of 5 patients engaged in treatment-interfering behaviors during the first 3 months of therapy. In general, treatment-disrupting behaviors were not predicted by baseline DSM-IV Axis I or II disorders. In contrast, impulsive behaviors, anger outbursts, and contract violations were significantly predicted by psychodynamic variables, especially the DP levels Fragmentation and Egocentricity. DP variables accounted for an incremental predictive value of 23% for treatment-disrupting behaviors, over and above demographics and descriptive diagnoses. Parasuicidal gestures were not predicted by either DSM-IV diagnoses or psychodynamic variables.**

Conclusion. **Psychodynamic personality variables significantly predicted impulsive behaviors, outbursts of anger, and treatment contract violations during psychotherapeutic treatment. The amount of explained variance and incremental value was substantial. These findings support the relevance of psychodynamic assessment in clinical practice. (Journal of Psychiatric Practice 2011;17:21–34)**

KEY WORDS: personality disorder, psychodynamic diagnosis, Developmental Profile, treatment-disrupting behaviors, predictive validity, incremental value

INTRODUCTION

Impulsive acts, outbursts of anger, and parasuicidal behaviors, as well as treatment contract violations, occur frequently in the treatment of patients with personality disorders, especially during the early phase of psychotherapy. These phenomena are especially frequent in patients with borderline personality disorder.[1] Because these behaviors are associated with a high risk of dropping out of treatment and have a disrupting effect on group processes and the therapeutic milieu and a negative impact on other patients and

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staff morale, intensive group-oriented psychotherapy programs emphasize the need to control these acting-out behaviors.[2] An unambiguous treatment contract to avoid such disruptions is considered a prerequisite for a favorable course of treatment. This applies equally to psychodynamic and cognitive-behavioral treatment approaches.[1,3–6]

Researchers have suggested that as much as 40% of the variance in psychotherapy outcome is accounted for by patient characteristics and qualities.[7] The identification of predictive personality characteristics may help clinicians make better treatment choices and tailor treatment methods to patient needs and capabilities.[8] However, empirical research on the value of personality variables (whether descriptive diagnoses, personality traits, or psychodynamic features) in the prediction of "acting-out,"[3] "parasuicidal," or "therapy-interfering"[1] behavior is scarce, and results are inconsistent. In a study published in 1985, Colson et al. rated impulsive-aggressive and parasuicidal acts during inpatient treatment in a broad spectrum of psychiatric patients.[9] They found that character pathology at a borderline level was significantly correlated with such problems manifested during hospitalization. In a later study published in 1994, Colson et al. found that, contrary to their expectations, higher levels of psychodynamic functioning, as assessed by Rorschach scales for thought organization and object relations, were associated with more difficulties during treatment.[10] In contrast, in a study published in 1986,[11] Browning, using Loevinger's Sentence Completion Test to assess Loevinger's hierarchical model of ego development,[12] observed that during treatment, "critical incidents" (such as self-inflicted injuries, suicide attempts, assaults on staff, and damage to hospital property) could be better predicted by the presence of lower ego development than by age, gender, or IQ, respectively. Ego development accounted for a unique increment of 6% of the variance, with patients at lower stages of development exhibiting more problematic ward behavior. Altogether, our knowledge about the role of psychodynamic factors with respect to these disruptive behaviors and contract violations during treatment is limited.

The objective of the present study was to explore the predictive performance and incremental value of adaptive as well as maladaptive psychodynamic variables, as assessed by the Developmental Profile (DP),[13,14] with respect to impulsive acts, outbursts of anger, parasuicidal gestures, and treatment contract violations during the first months of treatment in an inpatient psychotherapeutic program for young adult patients with personality disorders. In our experience, limit setting during these first months of treatment is crucial for a beneficial treatment course. In line with the treatment philosophy of the program under study, we hypothesized that, during the initial phase of treatment, these therapy-interfering behaviors would be characteristic of patients with lower stages of psychodynamic developmental functioning, notably of patients with primitive levels of functioning as assessed by the DP. We also hypothesized that patients with higher capacities for adaptive functioning would have a less complicated course of treatment. With respect to incremental validity, we hypothesized that psychodynamic variables would explain the occurrence of treatment-disrupting behaviors over and beyond the combined effect of sociodemographic variables and descriptive DSM-IV diagnoses.

METHODS

Subjects

The subjects of the study were young adult patients with personality disorders who were admitted to the intensive inpatient psychotherapeutic unit De Zwaluw, Treatment Center for Personality Disorders Symfora Group, the Netherlands. At the start of treatment, each patient committed to stay in therapy 5 days a week for approximately 1 year, with weekends spent at home. Patients lived together in the therapeutic community and were required to adhere to the treatment program, which consisted of attending patient-staff meetings, sociotherapy, group psychotherapy, art therapy, psychodrama, psychomotor therapy, and music therapy. Each patient participated in family therapy whenever possible and received pharmacotherapy if necessary. This eclectic psychotherapy program is based on the integration of psychodynamic, cognitive-behavioral, and system therapy approaches.

Assessments

Outcome variables. Treatment-disrupting behaviors were defined as any acting out and self-destructive behaviors that ran counter to agreements made before treatment, and such contract violations might lead to premature termination of psychotherapy in

Table 1. Treatment-Disrupting Behaviors Inventory (TDBI): Intercorrelations among subscales (*N* = 89)

Subscales	*Anger outbursts*	*Parasuicidal behaviors*	*Contract violations*	*TDBI adjusted-score*
Impulsive acts	0.02	0.16	**0.36***	**0.64****
Anger outbursts		0.13	0.07	**0.53****
Parasuicidal behaviors.			0.07	**0.56****
Contract violations				**0.53****

*Spearman's rho correlation coefficients (2-tailed); *p < 0.05 ; **p < 0.01; **bold** = statistically significant*

consequence. These behavioral patterns were assessed by the Treatment-Disrupting Behavior Inventory (TDBI), which was developed for use in this study (Appendix 1). This inventory was based on three subscales of the Borderline Personality Disorder Severity Index: *Impulsivity, Anger outbursts,* and *Parasuicidal behavior*.[15,16] A fourth subscale, *Contract violations*, was constructed for this study to measure violations of the general and individual rules defined in the treatment contract. After constructing and testing the scales psychometrically, two psychology students blindly and independently assessed the TDBI during the initial 40–60 days of treatment based on day-to-day annotated records made by the staff in the patient files. The number of observed behaviors per month was calculated for every patient for each of the four subscales. The interrater reliability of the two raters on the TDBI was tested on 20 randomly selected patient files, using intra-class correlation coefficients (ICC) presuming fixed raters.[17] The median ICC over the four TDBI subscales was 0.84, "almost perfect" according to the rules of Landis and Koch.[18] Reliability was very high for the subscales *Impulsive acts* (ICC = 0.84), *Anger outbursts* (ICC = 0.86), and *Contract violations* (ICC = 0.83), and substantial for *Parasuicidal behaviors* (ICC = 0.67).

An overall TDBI score was calculated by adding the four subscale scores. Because of the skewed distribution of the TDBI subscale scores, intercorrelations of the TDBI subscales were calculated using Spearman's rho. All four TDBI subscales were significantly correlated with the overall TDBI score (Table 1). However, the subscales *Impulsive acts* and *Contract violations* were the only two subscales with a significant intercorrelation, indicating that different patterns of treatment-disruptive behaviors were present in the patients in the current study.

In order to calculate a composite score that represented all subscales equally, an *adjusted* TDBI score was constructed post hoc using centered z-scores. For this purpose, the scores on the subscales were dichotomized (i.e., present versus absent) for *Impulsive acts*, *Anger outbursts* and, *Parasuicidal behaviors*; or above versus below median scores for *Contract violations*.

Descriptive predictors. All patients were systematically assessed with respect to sociodemographic characteristics (age, gender, marital status, and educational level) and clinical DSM-IV Axis I and Axis II diagnoses. DSM-IV diagnostic procedures were conducted following the LEAD principle: Longitudinal Expert evaluation using All Data.[19,20] DSM diagnoses were made at admission by experienced psychiatrists and clinical psychologists, based on clinical history, collateral information, referral letters, and personality questionnaires.

Psychodynamic predictors. Habitual psychodynamic functioning in ordinary life was assessed with the Developmental Profile (DP).[13,14] Based on psychodynamic developmental psychology, DP describes the degree to which psychosocial functioning is determined by mature adaptive and by "early" maladaptive behavioral patterns.[21,22] DP standardizes psychodynamic personality diagnostics to make them more convenient for clinical diagnosis and treatment planning, and it enables empirical validation. DP consists of a matrix of 10 *Developmental Levels* (rows) and 9 *Developmental Lines* (columns) (Appendix 2). Each Developmental Level describes a central characteristic in the development of psychosocial capacities. These central characteristics are, in ascending order of development, *Lack of Structure*, *Fragmentation*,

Self-centeredness, *Symbiosis*, *Resistance*, *Rivalry*, *Individuation*, *Solidarity*, *Generativity*, and *Maturity* (see Appendix 3). Each DP-level score is made on the basis of the nine psychosocial domains representing the Developmental Lines (see Appendix 4), referring to *Social Attitudes*, *Object Relations*, *Self-Images*, *Norms*, *Needs*, *Cognitions*, *Problem Solving (thoughts and feelings)*, *Problem Solving (actions)*, and *Miscellaneous Themes*. Developmental levels in the DP matrix are hierarchically organized, according to the degree to which they affect psychosocial functioning, and range from a primarily primitive level (*Lack of Structure*) to ultimately mature level (*Maturity*). These levels are not assumed to be mutually exclusive. The lowest six Developmental Levels (*Lack of Structure, Fragmentation, Self-centeredness, Symbiosis, Resistance,* and *Rivalry*) refer to maladaptive behaviors, while the highest four Developmental Levels (*Individuation, Solidarity, Generativity,* and *Maturity*) refer to adaptive functioning.

DP is assessed with a semi-structured interview in order to obtain a detailed description of the patient's daily functioning over the previous 10 years, by focusing on the way the patient functions in the context of family and friendships, education and work, and sports and hobbies. Other questions explore distressing events and feelings of fear, anger, guilt, shame, and self-esteem. The interview lasts 2 to 3 hours and is usually spread over two sessions. The interpretation of the information derived from the interview is based on a scoring protocol. This protocol describes in observational terms all 90 items comprising the DP-matrix (10 DP-levels x 9 PD-lines). The rater indicates on a 4-point scale the extent to which the behavior of the patient corresponds with the relevant operational definition: not applicable (code 0), marginally applicable (code 1), largely applicable (code 2) or fully applicable (code 3). As summarized elsewhere,[14] data on the psychometric properties of the DP indicate sufficient interrater reliability, internal consistency, and discriminant validity.[24–26] In this study, the DP interviews were conducted by trained psychologists. The verbatim texts were scored, in conformance with the DP scoring protocol, by experienced psychiatrists and clinical psychologists who were specially trained and supervised by the Developmental Profile Foundation and who had participated in earlier studies evaluating interrater reliability.[24]

In addition to scores on the 10 DP levels, we computed aggregate variables. By summing the scores on the Developmental Levels in the adaptive and maladaptive realms, respectively, we calculated *Adaptive Functioning* (ADAP) and *Maladaptive Functioning* (MALADAP) scores. We further divided the maladaptive DP levels into two variables covering the three most *Primitive Developmental Levels* (called PRIM), and the three less primitive, more advanced maladaptive *"Neurotic" Developmental Levels* (called NEURO). Patient overall psychodynamic functioning was covered by the Developmental Profile Index (DPI). In computing the DPI, raw scores at each level are weighted, from 1 for Lack of Structure to 10 for Maturity. These weighted scores are then summed and divided by the sum of all raw scores of the ten Developmental Levels (see discussion of DENS below). This results in a DPI score with a theoretical range of 1 to 10, reflecting an overall level of developmental maturity. A raw score, which we called the *Rating Density Score* (DENS), was calculated by summing all scores of the 90 matrix cells of the DP matrix. This sum score characterizes the patient's and the rater's response style: if the patient expresses more of his or her thoughts, feelings and behavior, or if raters elicit more information from the patient, there will be more ratings on the DP, resulting in a higher DENS score. In this study, the DENS score ranged from 20 to 56 (mean 38.5; standard deviation [SD] = 8.1) and significantly predicted scores on all psychodynamic DP variables. In establishing the predictive performance of subsequent DP variables, the possible confounding effect of the DENS score was taken into account.

Data Analysis

To measure central tendency, means and medians were calculated for continuous data, and percentages were calculated for dichotomous or dichotomized data. To measure dispersion, SDs were calculated. To explore the predictive value of the DP variables, in the case of dichotomous or dichotomized variables, a multiple logistic regression analysis was performed, with the results expressed as odds ratios (ORs), including a measure of uncertainty (95% confidence interval [CI]) and level of statistical significance (p value). The incremental value of DP variables was identified by means of hierarchical regression analysis. A regression model that included a selection of potentially predictive sociodemographic characteristics and the psychiatric DSM-IV classification was subsequently

compared with a model including these same variables plus DP variables. The differences in explained variance between the two models were expressed in terms of Nagelkerke's R^2 change (ΔR_2), indicating the incremental value of the pertinent DP variable (i.e., the amount of variance explained in the model over and above sociodemographic and psychiatric variables]. All testing took place at the 0.05 level of significance (two-tailed).

RESULTS

Clinical Characteristics

Between January 2000 and May 2004, 125 patients were admitted to the inpatient treatment unit. At admission, the DP[13] was administered to 113 (90%) of these patients. It was not possible to assess the DP in the remaining 12 patients due to early dropout, temporary lack of sufficient assessment staff, or occasional patient refusal to grant informed consent. Eighty-nine patients met criteria for entry (i.e., staying in treatment for 2 months or longer and having a patient file available for research purposes) and were included in the prediction study. These patients were predominantly female (74%), young (mean age 24 years, SD 4.4 years), single (88%), and of moderate educational attainment (45% had completed at least high school or comparable level). All patients had a principal clinical diagnosis of a DSM-IV Axis II personality disorder, predominantly in cluster B (27%), or personality disorder not otherwise specified (NOS) (54%). Most of the patients (93%) also met diagnostic criteria for one or more Axis I disorders (see Table 2), most frequently mood disorders, anxiety disorders, eating disorders, and substance abuse.

Developmental Profile Scores

In this sample of patients with personality disorders, more maladaptive (74%) than adaptive developmental patterns (26%) were found. Within the maladaptive realm, more advanced "neurotic" level scores (55%) than primitive level scores (19%) were observed. On the individual DP levels, *Symbiosis* (25%), *Resistance* (20%), *Individuation* (16%), and *Fragmentation* (12%) were most frequently scored. In contrast, very low frequencies were found for the most immature level *Lack of Structure* (3%) and for the highest adaptive levels *Generativity* (1%) and *Maturity* (< 1%) (Table 3).

As described in more detail elsewhere,[27] some DP variables were correlated with gender and age, but none of the DP variables was significantly correlated with educational level or marital status. When scores were corrected for DENS, females achieved higher levels of adaptive functioning, especially of *Individuation*. In the maladaptive realm, males scored higher on *Self-centeredness* and *Rivalry*, whereas females scored higher on *Symbiosis*. Adaptive functioning, especially *Individuation*, was positively related to age. Therefore, unbiased predictions of treatment-disrupting behaviors by DP variables should also be adjusted for gender and age.

DP variables were not significantly correlated with the presence of Axis I disorders. However, the presence of cluster B personality disorders, adjusted for DENS and sociodemographic variables, was clearly associated with a high score on PRIM, particularly a high score on *Fragmentation*. Cluster B personality disorders were also correlated with a low score on NEURO, particularly a low score on *Resistance*. In contrast, cluster C personality disorders were associated with a high score on NEURO, particularly on *Symbiosis*. Finally, personality disorder NOS was associated with a high score on *Resistance* as well as a relative absence of *Fragmentation*.

Treatment-Disrupting Behaviors

During the first months of treatment, treatment-disrupting behaviors and contract violations were observed in 63 of the 89 patients (71%). *Impulsive acts* (52%) were found most frequently, followed by *Contract violations* (49%), *Parasuicidal behaviors* (43%), and *Anger outbursts* (23%). Two subscales presented a gender specific pattern. Significantly more women than men engaged in *Parasuicidal behaviors* (51% versus 21%; OR = 4.66; 95% CI = 1.48–14.61; p = 0.001), while more men violated basic commitments in their treatment contract (71% versus 42%; OR = 3.45; 95% CI = 1.23–9.09; p = 0.02) (Table 4). Neither age, marital status, nor educational level was significantly related to these treatment-interfering phenomena.

Prediction of Treatment-Disrupting Behaviors by Psychiatric Diagnoses

The *adjusted* TDBI score was not significantly associated with Axis I disorders, with the exception of DSM-

Table 2. DSM-IV (Axis I and Axis II) classification of study population

	Total (N = 89)		*Females (n = 66)*		*Males (n = 23)*		*Females vs. males*
	n	*(%)*	*n*	*(%)*	*n*	*(%)*	*p*[a]
Axis I disorder							
Mood disorders	45	(50.6)	31	(47.0)	14	(60.9)	0.48
Anxiety disorders	37	(41.6)	32	(48.5)	5	(21.7)	0.02
Eating disorders	22	(24.7)	21	(31.8)	1	(4.3)	0.01
Substance-related disorders	17	(19.1)	7	(10.6)	10	(43.5)	0.01
Dissociative disorders	6	(6.7)	5	(7.6)	1	(4.3)	1.00
Other Axis I disorders[b]	19	(21.3)	15	(22.7)	4	(17.4)	0.58
No diagnosis	6	(6.7)	4	(6.1)	2	(8.7)	0.66
Axis II disorder (principal diagnosis)							
Cluster A	4	(4.5)	1	(1.5)	3	(13.0)	0.06
Cluster B	24	(27.0)	22	(33.3)	2	(8.7)	0.02
Cluster C	13	(14.6)	10	(15.2)	3	(13.0)	1.00
Personality disorder NOS	48	(53.9)	33	(50.0)	15	(65.2)	0.35

[a]*Fischer's exact testing (2-tailed);*

[b]*Disorders usually first diagnosed in infancy, childhood, or adolescence (n = 3), impulse-control disorders (n = 3), somatoform disorders (n = 2), remaining other disorders (n = 22), deferred diagnosis (n = 3)*

IV eating disorders (OR = 4.94; 95% CI = 1.56–15.66; p = 0.01). Patients with eating disorders engaged more in *Impulsive acts* (OR = 5.93; 95% CI = 1.84–19.07; p = 0.01). *Impulsive acts* were also positively associated with Cluster B personality disorders (OR = 2.78; 95% CI = 1.00–7.76; p = 0.05), and negatively with the presence of a personality disorder NOS (OR = 0.38; 95% CI = 0.16–0.92; p = 0.04). The other TDBI subscales could not be predicted by any DSM-IV diagnoses.

Prediction of Treatment-Disrupting Behaviors by Psychodynamic Variables

Using regression analysis, and controlling for gender, age and DENS, the *adjusted* TDBI score was significantly predicted by immature psychodynamic functioning as expressed by low DPI (OR = 0.97), by lower scores on the neurotic levels NEURO (OR = 0.86), and by higher scores on the primitive levels PRIM (OR = 1.26) (Table 5). With regard to the latter, especially higher scores on *Self-centeredness* (OR = 1.33), *Fragmentation* (OR = 1.27), and *Lack of structure* (OR = 1.77) predicted the *adjusted Treatment-Disrupting Behavior Score*. The subscales of *Impulsive acts*, *Anger outbursts* and *Contract violations* generally showed similar predictive patterns in terms of both significance level and magnitude of estimation, while *Parasuicidal behaviors* did not (Table 5) (i.e., none of the DP variables significantly predicted behaviors with self-inflicting or suicidal intentions).

Incremental Value of the DP levels for Prediction of Treatment-Disrupting Behaviors

Only 5 of the 16 sociodemographic and descriptive diagnostic variables that were evaluated were found to be associated with treatment-disrupting behaviors (based on TDBI scores) at a $p \leqslant 0.20$ level of significance in at least 7 subjects: educational level, anxiety disorders, eating disorders, cluster B personality disorders, and personality disorder NOS. A "basic model" using these 5 variables as predictors showed that they accounted for a non-significant 19% of variance in disrupting behaviors and contract violations (R^2 = 0.19; p = 0.19). Addition of various DP variables in the "overall model" (Table 6), in a series of regression analyses, led to a significant increment in the explained variance of the adjusted TDBI score, in the case of the DPI (ΔR^2 = 0.14), the ADAP (ΔR^2 = 0.06), the NEURO (ΔR^2

Table 3. Developmental Profile scores (N = 89)

	Mean	*SD*	*Range*
Aggregate variables			
DPI	4.93	0.51	3.67–6.36
ADAP	9.92	3.78	4–25
MALADAP	28.53	7.16	14–47
NEURO	21.09	5.10	9–36
PRIM	7.44	5.48	0–27
Developmental levels			
Maturity	0.13	0.38	0–2
Generativity	0.48	0.78	0–4
Solidarity	3.44	2.01	0–12
Individuation	5.87	1.77	2–11
Rivalry	3.80	2.37	0–10
Resistance	7.63	3.23	1–16
Symbiosis	9.66	4.12	1–20
Self-centeredness	1.70	2.72	0–13
Fragmentation	4.66	3.09	0–16
Lack of structure	1.08	1.36	0–6

SD = standard deviation; DPI = Developmental Profile Index; ADAP = Adaptive functioning; MALADAP = Maladaptive functioning; NEURO = Neurotic Developmental Levels; PRIM = Primitive Developmental Levels

= 0.10), and the PRIM ($\Delta R^2 = 0.16$), as well as in the case of the Developmental Levels of *Solidarity* ($\Delta R^2 = 0.07$), *Individuation* ($\Delta R^2 = 0.04$), *Resistance* ($\Delta R^2 = 0.06$), *Symbiosis* ($\Delta R^2 = 0.06$), *Self-centeredness* ($\Delta R^2 = 0.08$), *Fragmentation* ($\Delta R^2 = 0.08$), and *Lack of structure* ($\Delta R^2 = 0.19$). The other DP variables did not account for a significant incremental change in the explained variance of the adjusted TDBI score.

Adding ADAP, NEURO, and PRIM simultaneously to the basic model resulted in a significant increase of 23% explained variance of the adjusted TDBI score (overall model $R^2 = 0.42$, $p = 0.002$; incremental value $\Delta R^2 = 0.23$, $p = 0.0001$).

DISCUSSION

During both cognitive-behavioral and psychodynamic psychotherapy for patients with personality disorders, a hierarchy of treatment targets is stressed, with parasuicidal and treatment-interfering behaviors the

Table 4. Treatment-disrupting behaviors: prevalence (mean and standard deviations per month[a]) and gender differences

Treatment-disrupting behaviors	*All patients (n=89)*				*Women (n = 65)*		*Men (n = 24)*		*Women vs. men[b]*	
	Mean	*SD*	*Median*	*Range*	*Mean*	*SD*	*Mean*	*SD*	*z*	*p*
Impulsive acts	0.62	1.01	0.36	0–5.42	0.64	1.11	0.56	0.69	–0.48	0.64
Anger outbursts	0.12	0.26	0.00	0–1.08	0.12	0.25	0.12	0.27	0.19	0.89
Parasuicidal behavior	0.42	0.68	0.00	0–4.33	0.54	0.75	0.11	0.23	**2.94**	**0.01**
Contract violations	1.66	2.09	0.90	0–12.28	1.23	1.44	2.86	2.99	**–2.49**	**0.02**
TDBI sum score	2.83	2.64	2.17	0–14.09	2.52	2.21	3.65	3.48	–1.14	0.26
TDBI adjusted score	0.00	0.66	–0.17	–0.71–2.81	–0.08	0.55	0.20	0.87	–0.01	1.00

[a]Number of treatment-disrupting behaviors / day x 21.67; [b]Mann-Whitney U test exact testing (2-tailed); SD: standard deviation
TDBI: Treatment-Disrupting Behavior Index

Table 5. Developmental Profile Scores: Prediction[a] of treatment-disrupting behaviors

	Impulsive acts[b]			*Anger outbursts*[b]			*Parasuicidal behavior*[b]			*Contract violations*[c]			*TDBI adjusted-score*[d]		
	OR	***p***	***95% CI***	***OR***	***p***	***95% CI***	***OR***	***p***	***95% CI***	***OR***	***p***	***95% CI***	***OR***	***p***	***95% CI***
Aggregate variables															
DPI[e]	**0.97**	**0.02**	**0.94–0.99**	**0.97**	**0.03**	**0.94–1.00**	1.00	0.86	0.98–1.03	**0.96**	**0.01**	**0.93–0.98**	**0.97**	**0.05**	**0.95–0.99**
ADAP	**0.85**	**0.03**	**0.73–0.98**	0.89	0.18	0.74–1.06	1.07	0.33	0.93–1.24	**0.84**	**0.03**	**0.72–0.98**	0.90	0.15	0.79–1.04
MALADAP	**1.18**	**0.03**	**1.02–1.37**	1.13	0.18	0.95–1.35	0.93	0.32	0.81–1.07	**1.20**	**0.03**	**1.02–1.14**	1.11	0.15	0.97–1.27
NEURO	0.92	0.15	0.83–1.03	**0.87**	**0.04**	**0.77–0.99**	0.95	0.35	0.85–1.06	**0.88**	**0.03**	**0.78–0.99**	**0.86**	**0.02**	**0.77–0.97**
PRIM	**1.97**	**0.01**	**1.05–1.36**	**1.17**	**0.01**	**1.04–1.31**	1.01	0.90	0.91–1.11	**1.25**	**0.01**	**1.09–1.43**	**1.26**	**0.01**	**1.08–1.39**
Developmental levels															
Maturity	0.46	0.22	0.13–1.58	0.73	0.69	0.15–3.46	1.59	0.47	0.46–5.54	0.39	0.16	0.10–1.45	0.47	0.23	0.13–1.63
Generativity	0.72	0.27	0.40–1.29	0.61	0.24	0.26–1.39	***1.86***	***0.07***	***0.95–3.63***	1.05	0.86	0.60–1.87	0.90	0.72	0.52–1.57
Solidarity	0.81	0.11	0.62–1.05	0.89	0.45	0.65–1.21	1.16	0.28	0.89–1.50	**0.72**	**0.03**	**0.54–0.97**	0.87	0.26	0.68–1.11
Individuation	***0.76***	***0.06***	***0.57–1.00***	0.81	0.23	0.58–1.14	0.97	0.80	0.73–1.28	***0.75***	***0.06***	***0.56–1.01***	0.84	0.20	0.64–1.09
Rivalry	0.98	0.81	0.80–1.19	0.95	0.70	0.75–1.21	0.90	0.32	0.73–1.11	0.97	0.79	0.79–1.19	1.02	0.83	0.84–1.25
Resistance	0.91	0.24	0.78–1.06	0.88	0.20	0.73–1.07	0.94	0.43	0.80–1.10	0.89	0.14	0.75–1.04	***0.87***	***0.09***	***0.74–1.02***
Symbiosis	0.96	0.53	0.85–1.09	0.90	0.16	0.77–1.04	1.01	0.87	0.89–1.15	0.92	0.20	0.81–1.05	***0.89***	***0.07***	***0.78–1.01***
Self-centered	**1.35**	**0.03**	**1.04–1.75**	**1.34**	**0.02**	**1.05–1.71**	0.92	0.48	0.74–1.15	**1.32**	**0.04**	**1.03–1.70**	**1.31**	**0.03**	**1.04–1.65**
Fragmentation	**1.27**	**0.02**	**1.05–1.53**	**1.24**	**0.02**	**1.04–1.48**	1.03	0.69	0.88–1.21	**1.29**	**0.01**	**1.07–1.55**	**1.23**	**0.02**	**1.04–1.47**
Lack of struct.	1.14	0.47	0.80–1.61	1.13	0.55	0.77–1.65	0.14	0.47	0.80–1.63	**1.18**	**0.01**	**1.19–2.71**	**1.77**	**0.01**	**1.16–2.67**

[a]Logistic regression analyses using dichotomized measures. All analyses were controlled for gender, age and DENS.
[b]Dichotomized: absent = score 0 and present = score ⩾ 1
[c]Dichotomized at median: 0 = below median, 1 = above median
[d]TDBI adjusted score, dichotomized at median: 0 = below median, 1 = above median
[e]DPI adjusted for DENS

DPI = Developmental Profile Index;
ADAP = Adaptive functioning;
MALADAP = Maladaptive functioning;
NEURO = Neurotic Developmental Levels;
PRIM = Primitive Developmental Levels. OR = odds ratio;
TDBI = Treatment-Disrupting Behavior Inventory; DENS = Rating Density Score

highest priority.[1,5] Inability to control these behaviors often results in premature treatment termination and, consequently, poor effectiveness and a waste of expensive treatment resources. In this study, we explored the predictive power of psychodynamic features, as assessed with the DP, for these treatment-interfering phenomena within a psychotherapeutic treatment program for patients with personality disorders with a range of Axis I disorders. The vast majority (71%) of these young adult inpatients did engage in defined disruptive behaviors and contract violations during the first months of treatment, varying between 0 and 14 (mean 2.8) incidents per month, indicating that some patients engaged in these therapy-interfering behaviors more than three times a week. Parasuicidal behaviors were more prevalent in women, while contract violations were more prevalent in men, probably reflecting a gender-related distinction between introverted hostile "depressive borderline" female patients and extraverted hostile "antisocial borderline" male patients.[28,29]

With the exception of eating disorders, DSM-IV Axis I disorders did not predict the occurrence of treatment-disrupting behaviors. Patients with eating disorders engaged in impulsive acts relatively frequently, which is not surprising, since binging and vomiting were included as both predictive and outcome variables in the study. DSM-IV Axis II disorders did not significantly predict the frequency of disruptive behaviors and contract violations, with the exception of the presence of a Cluster B personality disorder. This association can also be explained by overlapping symptomatic behaviors in the predictive and outcome variables. Contrary to our expectations, parasuicidal behaviors were not correlated with Cluster B personality disorder. Better impulse control (low on *Impulsive acts*) was found in patients with DSM-IV personality disorder NOS, which may be attributed to low scores on changeability (DP level of *Fragmentation*), coupled with above average scores on control (DP level of *Resistance*). However, anger outbursts, parasuicidal behaviors, contract violations, and the overall amount of treatment-disrupting behaviors were not predicted by any of the Axis I or Axis II disorders.

In contrast, psychodynamic variables did predict the frequency of treatment-disrupting behaviors, as assessed by the subscales *Impulsive acts*, *Anger outbursts*, and *Contract violations*. Indicators of limited developmental functioning, whether expressed by low adaptive patterns and/or more pronounced maladaptive function, gave rise to more acting out and other treatment-interfering behaviors. As expected, the primitive developmental levels, *Self-centeredness*, *Fragmentation*, and *Lack of structure,* did predict treatment-disrupting behaviors in a statistically and clinically meaningful way: *Self-centeredness* reflecting narcissistic and antisocial tendencies as described by Kernberg[30] and Kohut,[31] *Fragmentation* referring to the Borderline Personality Organization criteria as defined by primitive defenses and identity diffusion,[30] and *Lack of structure* capturing the temporary loss of reality testing and other enduring psychological deficits within the lowest-level borderline domain.[29,32]

Table 6. Treatment-Disrupting Behavior Index adjusted score: Incremental validity of Developmental Profile variables

	Overall model		*Model of interest*	
	R^2	*p*	ΔR^2	*p*
Aggregate variables				
DPI	0.33	0.001	**0.14**	**0.0001**
ADAP	0.25	0.05	**0.06**	**0.02**
MALADAP	0.22	0.18	0.03	0.08
NEURO	0.29	0.01	**0.10**	**0.001**
PRIM	0.35	0.001	**0.16**	**0.0001**
Developmental levels				
Maturity	0.20	0.56	0.01	0.32
Generativity	0.19	1.00	0.00	1.00
Solidarity	0.26	0.03	**0.07**	**0.01**
Individuation	0.23	0.16	**0.04**	**0.05**
Rivalry	0.20	0.58	0.01	0.32
Resistance	0.25	0.05	**0.06**	**0.02**
Symbiosis	0.25	0.05	**0.06**	**0.02**
Self-centeredness	0.27	0.02	**0.08**	**0.01**
Fragmentation	0.27	0.02	**0.08**	**0.01**
Lack of structure	0.38	0.001	**0.19**	**0.0001**

DPI = Developmental Profile Index; ADAP = Adaptive functioning; MALADAP = Maladaptive functioning; NEURO = Neurotic Developmental Levels; PRIM = Primitive Developmental Levels; TBDI = Treatment-Disrupting Behavior Index. Basic model R^2 = 0.19 (p = 0.19); TDBI adjusted score trichotomized at 33.3 and 66.6 percentile; all Developmental Profile variables (with the exception of DPI) controlled for Rating Density Score.

Although, as might be expected on the basis of patient selection at intake, which excluded psychotic psychopathology, scores on *Lack of Structure* were rare though very relevant in predicting disruptive behaviors and contract violations.

With respect to the incremental validity of the DP, psychodynamic variables explained a substantial percentage of the variance in treatment-disrupting behaviors. The Developmental Profile accounted for a significant 23% of variance over and above the variance explained by sociodemographic and descriptive psychiatric variables combined. In his 1992 review, Lambert suggested that as much as 40% of the variance in psychotherapy outcome is accounted for by personal characteristics and qualities of the patient,[7] which is consistent with our results, in which sociodemographic variables, psychiatric DSM-IV diagnosis, and psychodynamic DP variables together explained 42% of the variance in disruptive behaviors and contract violations during the first months of treatment.

One may question the clinical relevance of the predictive performance of the DP for disrupting behaviors and contract violations.[33] The odds ratios of the DP variables in the current study permit one to calculate the probability of future treatment-disrupting behaviors. If scores on the DP level of *Fragmentation* (OR = 1.23) or *Self-centeredness* (OR = 1.31) increase by 3 points (about one SD), it is 86% and 125% more likely, respectively, that a patient will engage in these undesirable behaviors. Since the range of scores on these Developmental Levels in our population was substantial (*Fragmentation* scores ranging from 0 to 16 points, mean 4.7 points; *Self-centeredness* scores from 0 to 13 points, mean 1.7 points) and Abraham's DP scoring protocol quantifies an increase of 3 points on one of the successive Development Levels as clinically significant, the impact of these primitive Developmental Level scores on disruptive behaviors and contract violations can be discerned. Patients with more adaptive patterns of functioning (patients with "islands of health") engaged less in these treatment-interfering phenomena. Scores that were 4 points higher (about one SD) on the aggregated adaptive levels reduced the likelihood of engaging in impulsive acts or contract breaches by about 50%. One can hypothesize that these adaptive and maladaptive patterns have a compensatory effect with respect to indication and treatment allocation for intensive exploratory psychotherapy. We have observed in clinical practice that, to withstand the group dynamics in the therapeutic milieu, patients with serious problems in the primitive realms of *Fragmentation* and *Self-centeredness* benefit from the intensive psychotherapeutic program only if they have compensatory adaptive capabilities, such as a sufficient level of frustration tolerance, reflective functioning, and/or interpersonal skills.

In contrast to the other treatment-disrupting behaviors, parasuicidal behavior could not be predicted by psychodynamic DP variables in the current study. This could be ascribed to the fact that parasuicidal behavior can reflect a great diversity of motives and attitudes.[34] The multifaceted psychodynamic meanings of suicidal and self-injurious behaviors can be found on almost every maladaptive Developmental Level of the DP matrix.[35–38] Hallucinations during micro-psychotic episodes (*Lack of structure*) can provoke self-injurious behavior. Cutting in order to interrupt derealization, depersonalization, dysphoria, or feelings of emptiness relate to the level of *Fragmentation*. Self-mutilation as an act of omnipotence over issues of life and death can reflect *Self-centeredness*. A longing for warmth, care, and attention accompanying self-injurious behavior relates to *Symbiosis*. Attitudes and behavioral patterns relating to (self)hate, (self)punishment, and revenge, as well as the need for control or autonomy, are classified under the *Resistance* Developmental Level. The Developmental Level *Rivalry* collects behavioral patterns that are often actualized during epidemics of self-mutilation in residential settings, where patients overtly compete to be the best cutter in charge, the leader of the group. Therefore, in contrast to other treatment-disrupting behaviors, the diversity of psychodynamic meanings inherent in parasuicidal behaviors may explain its lack of predictive performance in this study.

This study had several strengths and limitations. Advantages of this clinical-empirical exploration are the relatively large sample of patients, the assessment of both descriptive and psychodynamic predictor variables, and the well defined types of disruptive behaviors and contract violations. By using the Developmental Profile, psychodynamic assessment of personality included a wide diversity of phenomena, including social attitudes, object relations, self-image, cognitive functioning, defense mechanisms, and coping styles, in the maladaptive as well as the adaptive realm.

This study also had a number of limitations. First, despite the relatively large sample size, some of the

subcategories within the total sample were still rather small. In addition, 10% of the study population dropped out early and were not included in the analyses. It is likely that these patients more often engaged in treatment-disrupting behaviors than the patients who remained in treatment. As a consequence, we cannot generalize the prevalence of treatment-disrupting behaviors to all patients in the treatment program. Second, no standardized interviews were used to assess DSM-IV diagnoses. The most prominent diagnosis on Axis II was personality disorder NOS. It is possible that more specific personality disorders would have been identified if a specific semi-structured interview for DSM-IV personality disorders had been used. Moreover, we cannot rule out the possibility that DSM-IV diagnoses might have been found to be predictive of treatment-disrupting behaviors if they had been assessed using semi-structured interviews. Furthermore, underestimation of the predictive power of the descriptive variables could have affected the incremental values of the psychodynamic variables. However, it should be noted that standardized DSM-IV assessments were used following the LEAD procedure by experienced psychiatrists and psychologists. Third, because the number of statistical tests in this explorative study was relatively large, it is recommended that this study be replicated in a larger study population. Fourth, predictive explorations and incremental values were obtained "mechanically" by statistical calculations, while "clinical" predictions by psychologists or psychiatrists, blending the knowledge of the DP with other assessment information, might have led to more or less pronounced incremental values.[33,39]

In conclusion, in contrast to sociodemographics and DSM-IV diagnoses at admission, psychodynamic personality variables can predict (and explain) future treatment-disrupting behaviors during psychotherapy. This clinical-empirical exploration emphasizes the predictive and incremental validity of the Developmental Profile.

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Appendix 1. Treatment-Disrupting Behavior Inventory (TDBI)*

1. Impulsive acts
- 1.1. Spending money
- 1.2. Unsafe sex
- 1.3. Promiscuity
- *1.4. Alcohol abuse*
- *1.5. Cannabis abuse*
- *1.6. Gambling*
- 1.7. Hard drug abuse
- *1.8. Binge eating and/or vomiting*
- 1.9. Reckless driving
- 1.10. Shoplifting
- 1.11. Other harmful impulsive behaviors (not self-mutilation or suicidal acts). Note:……

2. Anger outbursts
- 2.1. Anger outbursts or losing control over temper
- 2.2. Yelling, screaming, throwing things, smashing window, physical attacks

3. Parasuicidal behaviors

Self mutilation
- 3.1. Hitting oneself, hitting a wall or furniture in order to hurt oneself
- 3.2. Cutting oneself, scratching oneself
- 3.3. Burning oneself (e.g., cigarette, lighter, flatiron)
- 3.4. Pricking oneself with needles
- 3.5. Swallowing sharp objects
- 3.6. Ingesting itching substances
- *3.7. Hair pulling*
- 3.8. Other ways to harm oneself. Note:

Suicidal behavior
- *3.9. Expressing suicidal thoughts*
- 3.10. Threatening suicide
- 3.11. Suicidal behavior or actions
- 3.12. Attempting suicide

4. Violations of treatment contract
- *4.1. Coming late for therapy or appointments*
- *4.2. Illicit absence during therapy (no show, running away)*
- *4.3. Exclusive intimate relationship with another patient*
- *4.4. Improper use of medication (no suicidal intent)*
- *4.5. Crisis admission to acute ward*
- *4.6. Formal interview about treatment policy imposed by staff*
- *4.7. Formal oral caution or warning by staff*
- *4.8. Temporary suspension from therapy program*
- *4.9. Final/ultimate written notice/ultimatum by staff*
- *4.10. Temporary discharge from the program for reflection, obligatory time-out (no definite discharge from the program)*

**The TDBI was developed with permission based on three subscales and items from the Borderline Personality Disorder Severity Index (Impulsivity Anger outbursts and Parasuicidal behavior),[15,16] with the addition of a fourth subscale, Contract violations, constructed for this study to measure violations of the general and individual rules defined in the treatment contract. Items in italics were added to the Borderline Personality Disorder Severity Index to be as comprehensive as possible.*

Appendix 2. The Developmental Profile *(reprinted with permission from Abraham 2005[23])*

	Social attitudes	*Object relationships*	*Self-images*	*Norms*	*Needs*	*Cognitions*	*Problem solving (thoughts & feelings)*	*Problem solving (actions)*	*Miscellan. themes*
90. Maturity	91. Retirement	92. Altruism	93. Authentic self-image: existential	94. Authentic norms: existential	95. Significance	96. Meta-cognitions	97. Synthesis	98. Restructuring	99. Dying
80. Generativity	81. Responsibility	82. Care	83. Authentic self-image: social	84. Authentic norms: social	85. Integrity	86. Context-related cognitions	87. Respect for controversial (sub)cultures	88. Reorganization	89. Mourning
70. Solidarity	71. Living together	72. Mate	73. Authentic self-image: relational	74. Authentic norms: relational	75. Intimacy	76. Empathy	77. Respect for controversial other	78. Alliance	79. Collectivity
60. Individuation	61. Productivity	62. Equal	63. Authentic self image: individual	64. Authentic norms: individual	65. Identity	66. Self-reflection	67. Respect for controversial self	68. Assertiveness	69. Primary-process experiences
50. Rivalry	51. Status	52. Unattainable love	53. Ideal related self-image	54. Excessive ideals	55. Triumph	56. Histrionic cognitions	57. Reversal	58. Pretending	59. Feelings of sexual insufficiency
40. Resistance	41. Defiance	42. Oppressor	43. Norm-related self-image	44. Excessive norms	45. Domination	46. Objectifying cognitions	47. Elimination	48. Defensiveness	49. Moral masochism
30. Symbiosis	31. Dependence	32. Parent	33. External self-image	34. External norms	35. Passive need for love	36. Suggestive cognitions	37. Detachment	38. Giving up	39. Lack of basic trust
20. Self-centeredness	21 Soloist	22. Servant	23. Overrated self-image	24. Selfish norms	25. Mirroring	26. Self-referring cognitions	27. Disclaiming	28. Self-overestimation	29. Coldness
10. Fragmentation	11. Changeability	12. Frame	13. Vague self-image	14. Dichotomous norms	15. Sensation-seeking	16. Non personality-related cognitions	17. Primitive externalization	18. Acting out	19. Dissociation
00. Lack of structure	01. Bizarre behavior	02. Lack of affectivity	03. Lack of a self-image	04. Lack of norms	05 Primary satisfaction of needs	06. Lack of psychological phenomena	07. Falsification	08. Impulsive behavior	09. Disorganization

Appendix 3. Definitions of the developmental levels*

90. Maturity: Decentralization whereby one's personal interests are no longer of primary importance: no longer placing oneself in the center of things

80. Generativity: A true joint responsibility for the function of society

70. Solidarity: Functioning in a relationship; being part of a larger entity, without losing one's own personality

60. Individuation: Self-realization: living life in one's own way, taking into account the existing possibilities as well as the interests of others

50. Rivalry: Insecurity about one's own qualities as an adult man or woman, together with a striving to prove oneself

40. Resistance: Lack of autonomy; lack of inner freedom

30. Symbiosis: An incomplete separation or an inability to function independently

20. Self-centeredness: An excessive egoistic attitude

10. Fragmentation: A lack of inner consistency

00. Lack of structure: Lack of a frame of reference and/or lack of certain general human abilities

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Appendix 4. Definitions of the developmental lines*

Social attitudes: The habitual behavior of the patient in daily contacts

Object relationships: The meaning or role the patient ascribes to his or her significant others or to people in general

Self-images: The criteria that determine one's sense of self-esteem

Norms: A frame of reference for assessing the correctness or feasibility of a behavior

Needs: A general desire or urge for something one lacks

Cognitions: The manner in which one attributes meaning to one's experience

Problem solving (thoughts and feelings): Thoughts and feelings as a reaction to internal or external stress

Problem solving (actions): Action as a reaction to internal or external stress

Miscellaneous themes: Other specific complementary habitual behavioral patterns

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